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ABSTRACT

This report describes a study conducted to discover whether children with language delay would respond differently from normal children on two identically itemed tests of knowledge of adjectives and prepositions, one of which using objects as stimuli and the other using pictorial stimuli. It was hypothesized that the test using objects would be less difficult for the children with language delay than would the test using pictorial stimuli. The subjects were 15 children with normally developing language skills and seven children with language delay; all subjects were four or five years old. The report presents the test results for both groups and a case by case summary for the children with language delay; it then notes that an analysis of the results revealed no significant differences in children's performance based on presentation model and no clear error patterns relating to stimulus modes. Appendixes present the test responses of the children with language delay and provide language samples for subjects in the study. (GW)

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DIFFERENCES BETWEEN OBJECT AND VISUAL STIMULI WHEN TESTING CHILDREN WITH NORMAL LANGUAGE DEVELOPMENT AND CHILDREN WITH LANGUAGE DELAY IN A RECEPTIVE LANGUAGE TASK

by

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Submitted to the faculty of the Graduate School in
partial fulfillment of the requirements for
the degree Master of Arts in the
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. A special thank you is extended to my immediate family for their determination and loyalty in seeing me through this educational experience.

M.A.N.

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CHAPTER I

BACKGROUND AND PROBLEM

Introduction

In assessing the language development of young children, the traditional methods of measurement incorporate pictorial stimuli (e.g., Peabody Picture Vocabulary Test). Cognitive theorists, however, have sought to show that the initial stages in child development center on the child's acting upon concrete stimuli (e.g., manipulating toys or objects) with pictorial stimuli representing a more complex level of cognitive abstraction for the infant. The purpose of this paper is to show that traditional forms of language assessment are not entirely suitable for assessing children with language delay as the traditional measures do not show how the child performs at a concrete (as opposed to representational level of cognitive development. The hypothesis that language delayed children will perform as well as normal children on a test of adjectives and prepositions, using object stimuli, will be tested. Further, the counter-hypothesis that performance will vary when an identical task is performed using visual stimuli in the place of objects is also discussed.

Review of Related Research

The Sensorimotor Stage - Piagetian Theory

Piaget hypothesizes that the child organizes his world first by acting on the objects in his environment. The child assimilates the sensory information coming to him, then through the process of accomodation adapts himself to the surrounding environment. An example of this process is the child who feels thirsty, sees his bottle (assimilation) then reaches for his bottle and starts to drink (accomodation) to satisfy his needs.Piagetian theory is entrenched in the belief that all action responds directly to need (Piaget, 1968). "Need" can be broadly defined in this process as physical, emotiona, or cognitive in nature. The action for need process could be exemplified by the infant who bats at a mobile that is hanging above his crib. He is acting theoretically, because he has a need to see the mobile's properties and functions and to adapt to its existence in his environment. The neonate is beginning a series of stages in his cognitive development.

The first stage in the development of cognition is termed by Piaget as the sensorimotor period. Broken into a series of six developmental substages, this period includes the neonate's first use of reflex actions (e.g., sucking), basic emotions (e.g., frustration) and roughly organized perceptual actions (e.g., recognizing people as

different from one another). Methods of acting on the environment are gradually shifting processes for the neonate. At about two months old, the neonate tries to recapture events by constantly repeating the events that interest him; this is called the primary circular reaction. The child using the primary circular reaction is focusing all repetitive events in relationship to self (e.g., " How does my hand make the ball move?"). This characteristic is highly egocentric in nature.

At about four months old, the infant begins to become aware of the crude properties of objects such as texture and sound, focusing his attention on the consequences of his actions in the environment rather than on self (e.g., " How does the ball sound when it drops?"). This phenomena is termed by Piaget as the secondary circular reaction. The secondary circular reaction is later followed by the tertiary circular reaction when the child is about twelve months old. At this stage, the child acts on objects in his environment with the intent of pursuing novelty (e.g., dropping a ball in different places to see what happens each different time) (Morehead and Morehead, 1974). There is a gradual cognitive process evolving as the child repeatedly attempts to adapt to his world. The more successful he becomes at adapting, the more secure he feels in experimenting with new stimuli such as verbal language.

The Role of Imitation in the Emerging Language

Although language is not an overt part of the sensorimotor period (lasting loosely from birth to about two and one half years), language is quietly beginning to develop at this stage. The sensorimotor period lays the framework for the developmental period when the child's language structures begin to be expressed. One tool that the child uses to help himself grasp language is imitation. Ramer (1976) reports in a study based on seven infants, that imitation is used by children in varying degrees. She contends that imitation, while not a requisite for syntactical development, is used greatly in acquiring new lexical terms (e.g., house, mouse). Her study is relatively small, however, and would need to be sampled with a larger population to gain higher reliability. Piaget (1960), however, asserts that speech is learned through a complex process of imitation. He further states that "... when sounds are associated with specific actions, they result in the acquisition of language itself. Luria and Yudovich (1959) support this assumption when they assert that " By naming objects, and so defining their connections and relations, the adult creates new forms of reflection of reality in the child, incomparably deeper and more complex than those which he could have formed through individual experience." The child apparently associated the verbal label with the physical manipulation

of objects or self, and begins to independently label at about two years old.

Clark (1974) points out, however, that some words, adjectives and prepositions in particular, have no tangible referents and must be learned through demonstration. The child, for example, must have biggest demonstrated to him because he cannot smell, feel, hear, taste of see " a biggest." Demonstration occurs when someone other than the child acts on the objects in the environment. The child first imitates or manipulates objects in the demonstrator's presence. Later, at about two years old (roughly at the time of language emergence) the child practices deferred imitation; that is, the child begins to imitate in the absence of the demonstrator. Interestingly enough, this final form of imitation is also at the stage of development when early prepositions begin to be understood by children (Clark, 1974).

The sensorimotor period, then, is a time for imitation, experimentation, and intensive input for the infant. In a general sense, the child assimilates the world at large, with the emergence of language being regarded as a definite sign of accomodation. For the adult, speech is the primary signal that the infant is adequately adapting to his new world. For the researcher, the sensorimotor period is receptive, with its primary emphasis on the development of competence models which

can be tapped during language assessment, while the next stage (preoperational) will become expressive, with growing concern over performance as the focus of language measurement.

The Acquisition of Adjectives

As previously explained, adjectives are fed as input into the child's communication network through the demonstration activities of a second party. Eventually, the child begins to transform his receptive knowledge into verbal output adding a new dimension to the child's internalized feedback system. Researchers have questioned the selection processes that the child uses to pick out the appropriate verbalizations from the multitudes of receptive information that the child has received. An example would be: why does the child say "mommy" when he sees his mother, but does not identify " colonial mansion" when he sees his home? Clark (1974) proposes that the child begins to attach word meanings to verbalizations by picking out features of named objects. An example that Clark gives is of the child who refers to all four legged, furry animals as "doggie" because 1. he had heard the word doggie and 2. he has picked out the features four legged and furry. Clark refers to this phenomena as overextension. The child uses overextension to experiment with words in an effort to order the world around him. The child is picking out what he perceives as the most

salient characteristics of objects and using them in an attempt to greater accomodate himself to the world. For example, the child usually can better accomodate (ie. get what he wants) by saying "milk" when he is thirsty (even if he really means juice) than by crying and letting the listener guess at his needs.

Feature Orientation in the Acquisition of Adjectives and Prepositions

As mentioned, adjectives and prepositions are generally learned, first, by watching others demonstrate the concept in question (e.g., on) and secondly, by the child picking out the relevant attributes of the concept (Clark, 1974). The attributes of the objects are referred to as semantic features (Dale, 1972). Semantic features can be thought to be binary in nature, that is, present (shown as (+)) or absent (shown as (-)) in a concept. If a feature is present it is said to be unmarked. Conversely, if a feature is not present it is said to be marked.

In relation to the child's acquisition of adjectives, several studies have shown that the child first acquires the unmarked member of an antonym pair (e.g., big before little) (Brewer and Stone, 1975, Clark, 1972). The marked feature because it implies negation of the unmarked feature (ie. (+) little implies (-) big) becomes a more complex concept to acquire. The child cannot cognitively

negate until he first understands the attributes of the positive feature. Care, however, should be taken to avoid the belief that antonym pairs function as opposites for children. Harasym, Boersma and Maguire (1971) and Townsend (1974) indicate that while children understand polar opposites as different, they do not see them in terms as opposite in meaning. Furthermore, Clark (1972) after working with thirty preoperational stage children, concluded that opposite semantic fields are not set up by the child. Clark's results indicated that big was acquired before tall, high and long, long was acquired before wide, thick, and deep, on acquired before above and over, in acquired before above and over, up acquired before front and ahead, in front acquired before first, early and before. Clark feels that even though the child does not comprehend the full meanings of words, he is able to group according to related meanings. Again, the child can mark differences (+ or -) though not having a clear definition of opposite.

Clark's research extends itself for review to the data of Donaldson and Balfour (1968) and Palermo (1973) who found that more and less were used to convey the same concept to children. That is, less meant the same as more to their subjects. These research data indicate an absence of marking for the antonym pair, more-less. Harasym, Boersma, and Maguire (1971) suggest that the

absence of marking is due to the failure to develop conservation.

Conservation is the child's realization that amount, weight, volume and number remain constant even when the outward appearances of objects or groups are changed (Smart and Smart, 1973). The conserving child, will, for example, realize that a lump of clay is of the same weight when rolled from a round position into an oblong position. In terms of relational concepts, such as more and less, the nonconserver generally cannot tell the difference in concepts because he cannot realize that their appearances differ by number. The child, theoretically, cannot mark (+) number for more and (-) number for less. An example of the inability to mark for number features in more and less would be the child who cannot determine that a cup with ten chips has more chips than the table with five chips spread out on it.

Spatial Relationships

Prepositions basically follow a pattern like adjectives in terms of language development. The semantic features that a child selects, however, are well defined in terms of dimension (ie. position in space). Leech (1970) asserts that concrete nouns (e.g., house) are not marked for dimensionality but prepositions such as over, under and in front of exist in a three dimensional framework win a spatial orientation. Due to the

geometrical component added in the reception of prepositions they become more complex for the cognitive capacity of the child. An example of the contrast would be house, an object seen, felt, and lived in by the child, perceived as house in any position in space. Prepositions, conversely occur as nonmanipulable, non-object entities lying only on a specific horizontal, vertical or diagonal plane. The child, therefore, must have some concrete understanding of ± vertical, ± horizontal and ± diagonal to comprehend prepositions. The semantic features for the grammatical class, prepositions are cognitively well defined by the child.

Syntactic Components

The selection of semantic features is a beginning strategy in child language development. As the child's length of utterance and grammatical complexity (syntax) increase, multiple feature coding does not remain as an efficient system of communication. With a three year old child's system of language developed to roughly that of colloquial adult language (Lenneberg, 1973) it is reasonable to assume that grammatical sets (ie. adjectives and prepositions) are still stabilizing in the child's cognitive repertoire. Adjectives and prepositions are being tested by the child not solely for word meaning that is interrelated with other words.

Amidon and Carey (1972) suggest that syntax

acquisition is a key component in language development. After testing fifty children on the prepositions before and after, the researchers concluded that before and after are difficult to comprehend when placed in a subordinate clause (ie. Come home before you go to the store.) Amidon and Carey explain their results by quoting Clark and Clark (1970) " When the order of mention of events in a sentence corresponds to the order of occurence of events themselves, comprehension and memory are facilitated."; this is called the order of mention hypothesis. Townsend (1974) when studying comparative forms, also found the order of mention hypothesis to be used by children.

In terms of childrens' use of adjectives and prepositions, the current research indicates that measurement of such structures is variable, depending on the structures in which the targets (ie. adjectives and prepositions) are set. That is, a child might demonstrate better receptive understanding of after when placed in the main clause (ie. After he jumped the gate, he patted the dog.) than when placed in the subordinate clause (ie. He patted the dog after he jumped the gate.) (Clark, 1971) because after in the main clause is mentioned first.

Language Development in Children with Delay

Miller and Yoder (1974) state that " A review of the literature completed in 1970 (Yoder and Miller, 1972) concluded that retarded children develop the language code

in a manner similar to children without intellectual deficits but at a slower rate." Lenneberg (1967) also asserts that delayed language is a slowed down, stretched out version of normally developing language. Lackner (1968) demonstrated this assumption by writing phrase structure grammars for five children with mental retardation and five children exhibiting normal language development. The delayed children were matched for mental age and the controls were matched for corresponding chronological age. From a sample of one thousand sentences per child, Lackner concluded that structures became more complex and sentence length increased as mental age increased. He also found that more complex sentence types appeared in the childrens' grammars only if less complex types were found (e.g., A passive sentence would not occur unless the child also used a declarative sentence at some point.).

Theories of language delay are conflicting in the current literature. Some researchers such as Leonard (1972) feel that language is not delayed (ie. slowed down) in children but is devient in its forms and frequencies of occurance. Miller and Yoder (1974) also acknowledge the growing and conflicting theories in research and suggest that in remediation, the clinician become aware of the debate, be willing to shift if the data become more conclusive, but remain with the principles of slow but essentially normal language development

structures in delayed children. For the purposes of the present paper, Miller and Yoder's premise will be accepted.

Current Methods for Assessing Language Delay

Traditionally, language delay has been measured by standardized test instruments. These instruments typically have used visual stimuli in the form of pictures, as the main method of item presentation (Ammons and Ammons, 1948, Van Alystene, 1961, Dunn, 1965, Lee, 1969, Foster, Gidden and Stark, 1972). The pictures used in some of these tests are clearly dated in style and in content (Ammons and Ammons, 1948, Van Alystene, 1961). Tests such as the Assessment of Children's Comprehension of Language (Foster, Gidden and Stark, 1972) are purposely shadowed to decoy the normal child, but might, in fact, place the delayed child well below what he is capable of producing.

Visually based tests could penalize the delayed child because these tests might not show what the child is receptively capable of if the stimulus were based at a lower ordered cognitive level. Pictorial stimuli require the child to visually abstract attributes of objects (e.g., big). The child with delay might not be capable of such visual abstraction, but, when given actual objects, such as blocks, become able to cognitively process the necessary semantic features. Using object stimuli could bring the task closer to the set of cognitive strategies

used by the child during the sensorimotor period of development. The child, for example, acquires the concept of ball by touching, smelling, holding and bouncing a ball; not by seeing a picture of a ball. The child understands the attributes of real objects but not always the representations of objects (ie. pictures). Feature acquisition occurs on multilevels from cognitive processing using primary circular reaction strategies through the processes of visual abstraction. Traditional measures of testing in the two dimensional milieu (ie. pictures) unfortunately has not taken the stages of semantic acquisition into account.

Some researchers have recently become more aware of the complications involved in using visual stimuli and have tried to circumvent these complications by using object manipulation tasks. Most of these tasks, unfortunately have been done in research studies; not in formal diagnostic tests (Chapman and Miller, 1975, Amidon and Carey, 1972, Donaldson and Balfour, 1968, Miller and Yoder, in press). The actual manipulation of objects, however, moves the comprehension task dangerously close to a production task. Object manipulation requires a comprehension processing as well as simultaneous nonverbal reproduction of the entire target structure. The solution to this problem is a task requiring the subject to point to the objects cited, as used in a procedure by

Mehler and Bever (1967). In the pointing task, the child need not manipulate the objects to demonstrate understanding of the concept. A pointing task, then, is based on a competence model while the object manipulation task is based on a performance model of language development. The current study will use such a pointing task.

Statement of the Problem

Background

Piagetian theory indicates that the child uses many shifting strategies in his cognitive development. Cognition and language acquisition are linked in the selection processes that the child uses to pick out attributes of objects and to convert those attributes into receptive language structures. Language acquisition, too, is a gradually, but constantly shifting process for the child. Traditional measures for evaluating receptive language do not account for the specific cognitive stages in which the child may be functioning. Many standardized tests, in fact, require the child to function at a representational level of thought, that is, using very complex strategies. It is felt that if the child with language delay is cognitively acting at the sensorimotor stage of development then the current measurement techniques which do not take this into account may be inappropriate for this population. The child with delay, possibly understands more about language than he is

given credit for knowing. If the stimulus mode were changed during testing, it could be possible to prove this point. This project attempts to answer the questions surrounding this issue which are stated below.

The Problem

A. Given object stimuli, in the form of solid birch wood blocks, do children with language delay perform at the same level of competence as children without language delay in a receptive language task, involving adjectives and prepositions?

B. Given visual stimuli, in the form of drawings of solid cubes, do children with language delay perform at the same level of competence as children without language delay in the same ordered receptive language task of adjectives and preposition?

C. When comparing object stimuli to pictorial stimuli, is there a difference in children's overall performance on identical receptive language tasks involving adjectives and prepositions?

D. Given that the response sets between object and pictorial stimuli differ, is there a correlation between response set and mean length of utterance (Brown, 1973)?

CHAPTER II

Methodology

Subjects

All subjects were from Indiana homes of varying socioeconomic status. Fifteen children with normally developing language skills were chosen from pre-schools in Bloomington, Indiana. These subjects ranged in chronological age from four years and two months (4-2) to five years and five months (5-5) with a mean chronological age of four years and ten months (4-10). Six children with language delay and one child with behavioral disorder (Subject F) were chosen from the populations of the Bartholomew County Hospital, Indiana University Speech and Hearing Center- Outpatient Services, and the Stonebelt Council for Retarded Citizens. The subjects with delay ranged in chronological age from four years and one month (4-1) to five years and five months (5-5) with a mean chronological age of four years and ten months (4-10). All subjects were native speakers of English.

Subjects were first selected by chronological age, that is, they were required to be between the ages of four years and zero months and five years and six months old. The children were given the Auditory Reception subtest of the Illinois Test of Psycholinguistic Abilities (ITPA) (Kirk, McCarthy and Kirk, 1968). A language

sample was also collected during the initial session between investigator and child and analyzed for mean length of utterance (MLU) (Table 1). Mean length of utterance was computed on the basis of at least forty consecutive different utterances for fourteen of the twenty-two subjects. Possibly due to the unfamilarity with the examiner as well as the testing situation, some children talked less, and forty consecutive utterances could not be obtained. The language samples ranged in length between eighteen and fifty utterances. It is felt that the shorter language samples are fairly accurate, however, since the utterances appear to be random in length. Children who scored below an MLU of 4.0 and received a psycholinguistic age score that fell one year below their chronological age level were considered language delayed for the purposes of this study.* The Auditory Reception subtest of the ITPA as well as MLU were selected as criterion measures as no visual or object stimuli are needed to administer these tests. There was little chance, then, of selecting children with predetermined visual skills for the later tests involving visual and object stimuli.

*Subject F, the child with behavior disorder, scored eleven months below age level and below an MLU of 4.0.

TABLE 1

RULES FOR CALCULATING MEAN LENGTH OF UTTERANCE

1. Include all exact utterance repetitions. Stuttering is marked as repeated efforts at a single word; count the word once in the most complete form produced. In the few cases where a word in produced for emphasis or the like (no, no, no) count each occurrence.

2. Do not count such fillers as mm or oh, but do count no, yeah, and hi.

3. All compound words (two or more free morphemes), proper names, and ritualized reduplications count as single words. Examples: birthday, rackety-boom, choo- choo. Justification is that no evidence that the constituent morphemes function as such for these children.

4. Count as one morpheme all irregular past tenses of the verb (got, did, went, saw). Justification is that there is no evidence that the child relates these to present forms.

5. Count as one morpheme all diminutives (doggie, mommie) because these children at least do not seem to use the suffix productively. Diminutives are the standard forms used by the child.

6. Count as separate morphemes all auxiliaries (is, have, will, can, must, would). Also all catenatives : gonna, wanna, hafta. These latter counted as single morphemes rather than as going to or want to because evidence is that they function so for the children. Count as separate morphemes all inflections, for example, possessive (s), plural (s), third person singular (s), regular past (d), progressive (ing).

The Testing Environment

A quiet room in a familar environment for the child (ie. pre-school, clinic) was used. Each room contained a table and two chairs. The child was seated directly facing the examiner. Sessions lasted approximately thirty minutes each. Each child was seen for one session.

Materials

Solid birch wood blocks, six measuring 1 3/4" x 1 3/4" and four measuring 3/4" x 3/4" were used as stimulus items on the object task. Wood blocks were chosen as object stimuli in an attempt to reduce any novelty effects (Wayras and Ruder, 1974). Black ink drawings of the exact proportions and spatial representations of the blocks were made on 9"x 12" canvas paper. These pictorial stimuli were bound in a plain, green three ring, binder.

Score sheets contained a summary cover page (one page), Auditory Reception subtest (one page), a forty-eight item elicited imitation task (Lehner, 1976) (five pages) and the object and visual task items (one page). All score sheets were placed on a clipboard to prevent the child from seeing the examiner's markings.

Language samples were recorded on a Panasonic tape recorder, model RQ 309DS.

General Administration and Testing Procedures

Immediately upon entering the testing room, the examiner turned on the tape recorder as unobtrusively as

possible. The child and the examiner then engaged in several minutes of unstructured conversation. The language sample was collected at this time. When the child appeared comfortable, the Auditory Reception subtest of the ITPA was administered. A forty-eight item, non-context, elicited imitation task (Lehner, 1976) immediately followed. It should be noted that the entire elicited imitation task was done without contextual boundaries even though Lehner's study had twenty-four sentences that were context bound and twenty-four sentences that were not contextually bound. The rationale for doing all forty-eight sentences without contextual boundaries was 1. Lehner found no significant difference between context and non-context bound items in childrens' response sets, 2. non-contextually bound items could be presented more quickly with less obtrusive manipulation of materials. Upon completion of the elicited imitation task, either the object test (henceforth referred to as OT) of the visual test (henceforth referred to as VT) were presented. When one test was completed, administration of the second test immediately followed (e.g., when VT was completed, OT was then administered). Individual items were randomized in four different ways on the VT and OT sets to avoid an ordering effect on the data.

Individual items were repeated if the examiner felt if necessary or if the child requested repetition. The

directions:

> I am going to say a word and I want you to point to the picture of (or the blocks of) the word that I say. O.K.?

were verbally given.

The Tests

The object test and the visual test items were identical in content and in individual ordering. That is, a child would have all of the items in the VT presented, then be presented with the same ordered items on the OT. The items, however, were randomized from child to child. Each test contained twenty items. The adjectives and prepositions tested were big-small, more-less, same-different, first-last, left-right, biggest-small, smallest-big, in- out of, on-under, above -below. All ten of the unmarked members (ie. first, big) were presented first, then the list of ten marked members (ie. last, small) were subsequently tested to avoid the child's immediate cognitive identification of an item as a member of an antonym pair.

Items were presented by the examiner in the phrase, " Show me (item)." (e.g., Show me big.). This method of presentation circumvented any syntactical interferences that might arise (ie. embedding an item in a subordinate clause). Children were requested only to point to an item that they felt was correct. Two choices were possible answers to each item. At no time did any child

refuse to respond to this part of the interview.

A pictorial replication of the right/left item is shown in Table 2. On the object test, each block was placed directly on the picture representation in the test book so that differences in ordering, spacing, and visual representation could be avoided (Mehler and Bever, 1967). The back of the book served as a shield to the child while the examiner set up the objects. The book was then turned with the completed items directly facing the child. The stimulus was then given.

Scoring

Items were scored as (✓) for correct and (x) for incorrect responses. The total score for each test was computed as the number correct out of the twenty possible items.

Reinforcement

Peanuts were intermittently given to all of the children throughout the testing as reinforcers.

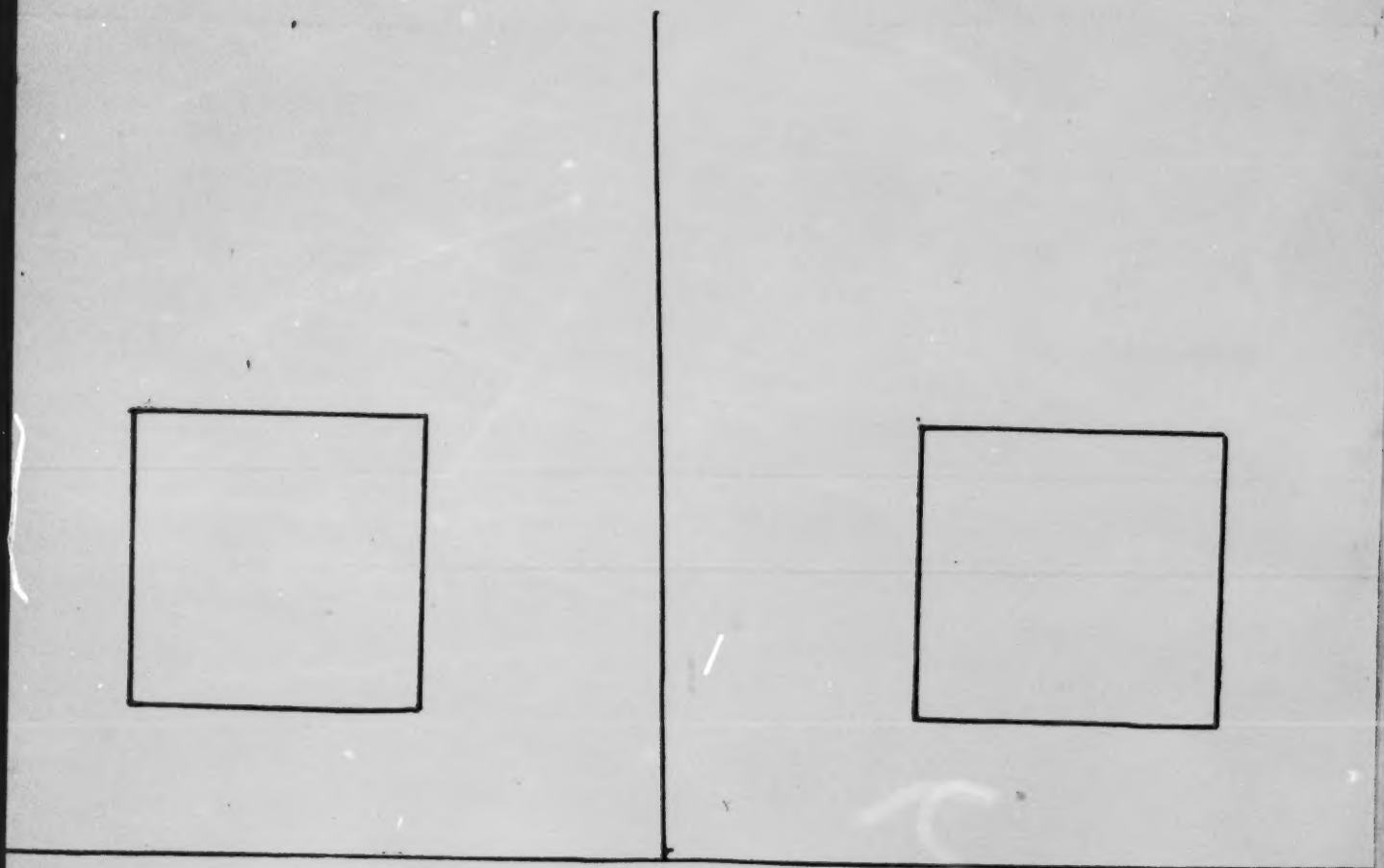

TABLE 2

PICTORIAL STIMULI - ITEM RIGHT

CHAPTER III

Analyses and Results

Introduction

The data were originally to be analyzed in terms of multiple correlations between the population with delayed language and the normal population. Each group was to have had an N of fifteen. Due to the very restricted chronological age limits set in this study, as well as the desire to keep the delayed population free of concomitant disorders (e.g., motor paralysis, profound hearing loss) a sample size of seven children with delayed language skills and fifteen children with normally developing language skills was accepted. The sample did not lend itself well to reliable stastical manipulation because of it's limited number of subjects and subjects' responses. The data were subsequently analyzed as a case by case summary of the children with language delay and an overall summary of the children with normally developing language skills. Stastical manipulation was done, in a limited way, to show the response sets used by both groups and the total population on the tests of object and visual stimuli (Table 3). Mean length of utterance was also arranged into seven levels to see whether response sets differed (Table 4). Order of item and order of test presentation

were analyzed, again, in a manner limited by sample size.

Results

All Subjects

The combined data from both groups showed a mean percentage of correct responses as 71.36 (SD 11.25)on the object test and 65.00 (SD 13.93) on the visual test. The variances of these responses yielded an f ratio of 1.238 (df 21), which did not show significance at the .05 level of confidence (Table 3).

Mean Length of Utterance

When mean length of utterance was studied, the responses were distributed unevenly, over seven stages. Stages one through four, inclusive, were the same stages set by Brown (1973). Stages five through seven, inclusive, were set arbitrarily by the author to evenly distribute the response classes of Group N (the normal group). Stages one through four, then, contain the response sets of Group D (the delayed group) while stages five through seven contain the response sets of Group N.

Table 4 demonstrates that children in stages 1,2, 4, 5, and 7 had mean percentages of correct responses that were higher on the object test than on the visual test. When f ratios were applied no significance was shown at the .05 level of confidence. At stage 2, a 20 percent difference occurred, but an f ratio could not be

TABLE 3

MEAN PERCENTAGE CORRECT RESPONSES AND STANDARD DEVIATIONS ON THE OBJECT AND VISUAL TESTS

oup	Object Test		Visual Test	
	$\bar{X}$	SD	$\bar{X}$	SD
oup N	75.00	9.25	65.00	12.39
oup D	63.57	11.80	55.00	15.55
l S's	71.36	11.25	65.00	13.93

TABLE 4

PERCENTAGE OF CORRECT RESPONSES AND STANDARD DEVIATIONS ON OT AND VT ACCORDING TO MEAN LENGTH OF UTTERANCE

Stage	MLU	N	OT		VT	
			$\bar{X}$	SD	$\bar{X}$	SD
1.	1.75- 2.24	1	45.00	0	40.00	0
2.	2.25- 2.74	1	75.00	0	55.00	0
3.	2.75- 3.49	3	61.66	13.84	61.66	5.72
4.	3.50- 3.99	2	65.00	0	52.50	31.82
5.	4.00- 4.49	5	73.00	12.04	61.00	5.47
6.	4.50- 5.50	5	76.00	6.89	76.00	8.94
7.	5.75- 7.75	5	76.00	6.52	72.00	13.96

applied as there were zero degrees of freedom. Only at stages 3 and 6 did no percentage difference in response set occur. It can be inferred from the data, then, that an increase or decrease in MLU did not significantly affect the response patterns of the children in the overall sample (N=22).

Orders of Presentation

The order of test presentation was randomized so that eleven subjects (S's) did the OT first and the VT second, and, eleven S's did VT first and OT second. Table 5 shows the mean percentages of correct responses for each group as well as the mean for the combined S' responses. Although Group D's mean scores appeared higher more times on the VT, regardless of the order of presentation, it must be noted that the standard deviations allow for wide variations on the OT response sets. Also notable, as the case by case survey will show, large interindividual differences occurred showing that some subjects' responses were higher scoring on one test over the other (ie. VT score was higher than the score on OT, or, OT score was higher than the score on VT).

The order of individual test items was randomized four different ways (Table 6). In no ordering were the differences in OT and VT notable. (Table 7).

TABLE 5

ORDER OF TEST PRESENTATION CALCULATED IN MEAN PERCENTAGE CORRECT RESPONSES AND STANDARD DEVIATION

Population	N	Method of Presentation	OT		VT	
			$\bar{X}$	SD	$\bar{X}$	SD
Group D	4	OT First Presented	56.25	8.30	73.33	2.87
	3	VT First Presented	50.00	19.58	61.66	5.81
Group N	7	OT First Presented	77.85	9.06	72.14	14.10
	8	VT First Presented	72.50	9.26	67.50	8.86
All S's	11	OT First Presented	70.00	14.14	64.09	18.95
	11	VT First Presented	71.36	9.51	63.36	10.01

TABLE 6

ITEM ORDERING

der 1			Order 2		
In	11.	Out of	1. Big	11.	Small
Left	12.	Right	2. More	12.	Less
More	13.	Less	3. Same	13.	Different
Above	14.	Below	4. First	14.	Last
Smallest	15.	Big	5. Left	15.	Right
First	16.	Last	6. Biggest	16.	Small
Big	17.	Small	7. Smallest	17.	Big
On	18.	Under	8. In	18.	Out of
Biggest	19.	Small	9. On	19.	Under
. Same	20.	Different	10. Above	20.	Below

der 3			Order 4		
First	11.	Last	1. More	11.	Less
In	12.	Out of	2. First	12.	Last
Big	13.	Small	3. Biggest	13.	Small
Left	14.	Right	4. In	14.	Out of
On	15.	Under	5. Above	15.	Below
More	16.	Less	6. Big	16.	Small
Biggest	17.	Small	7. Same	17.	Different
Above	18.	Below	8. Left	18.	Right
Same	19.	Different	9. Smallest	19.	Big
. Smallest	20.	Big	10. On	20.	Under

TABLE 7

ORDER OF ITEM PRESENTATION
CALCULATED IN MEAN PERCENTAGE OF CORRECT RESPONSES AND STANDARD DEVIATIONS
FOR THE TOTAL POPULATION (N= 22)

Ordering	N	OT		VT	
		$\bar{X}$	SD	$\bar{X}$	SD
Order 1	5	66.00	9.61	58.00	16.80
Order 2	6	73.33	14.37	65.00	15.17
Order 3	5	72.00	9.08	67.00	16.05
Order 4	6	73.00	12.11	69.16	11.14

Children with Normally Developing Language Skills

The children in Group N had a mean chronological age of four years and ten months (median age 4-11). On the Auditory Reception subtest of the ITPA, raw scores ranged from 15-26, with a mean score of 19.4 and a standard deviation of 3.64 (median score 19). These raw scores yielded a mean and median psycholinguistic age of five years, zero months; that is approximately two months above the mean chronological age. Mean length of utterances ranged from 4.08 to 7.53 with a mean score of 5.34 and a standard deviation of 1.00.

Children with Language Delay

The children in Group D had a mean chronological age of four years, ten months (median age 5-0). On the Auditory Reception subtest of the ITPA, raw scores ranged from 1 - 12, with a mean score of 6.71 and a standard deviation of 3.74 (median score of 6). These raw scores yielded an approximate mean psycholinguistic age of three years; that is approximately one year and ten months below the mean chronological age level. Mean length of utterance ranged from 2.11 to 3.58 with a mean score of 2.96 and a standard deviation of .57 .

On the object test, Group D obtained a mean score of 63.5 percent correct with a standard deviation of 2.36. On the visual test, a mean score of 55 percent correct was obtained with a standard deviation of3.109.

This is a difference of approximately two test items (e.g., two more correct responses on the OT than on the VT). In the case by case summary that follows, greater differences in responses will be shown by some subjects in their response sets across test types. Some subjects varied greatly from the mean while others did not; indicating the possibility of great interindividual differences due to the stimulus mode.

Case by Case Summary

Subject A

Subject A was seen in the clinical situation, where she had just received one half hour of language therapy. At the time of testing, Subject A was five years and one month old. On the Auditory Reception subtest of the ITPA, she received a raw score of 6, which yielded a psycho-linguistic age of two years and eleven months. An analysis of a forty-three item language sample provided an MLU of 2.11, approximately three standard deviations below the norms for the children in Group N of this study.

On the Ot, Subject A answered 45% of the items correctly. Forty percent of the items on the VT were answered correctly. The difference of 5% in scores on the OT and Vt is due to only one answer. Closer analysis of A's errors indicated that her answers were inconsistent from one test to the other. That is, in this case, five error items on the OT did not appear as error items on

the VT. The inconsistent error pattern could indicate 1. A used inconsistant cognitive strategies for selecting the features of an antonym pair, 2. fatigue caused inconsistent response patterns (especially after having been seen for a previous half hour of therapy), 3. the change in stimuli confused A. Due to this inconsistent response pattern, it is not possible to conclude what effect the stimuli had upon A's cognitive selection processes.

Subject B

Subject B was seen in the clinical situation where he had just received one half hour of language therapy. At the time of testing, B was five years, five months old. On the Auditory Reception subtest of the ITPA, he received a raw score of 7, which yielded a psycholinguistic age of three years, one month. An analysis of a thirty-one item language sample provided an MLU of 2.32, approximately three standard deviations below the norms for the children in Group N of this study. Subject B was quiet with the examiner but seemed to show interest in all that was said to him.

The difference between B's scores on the OT and VT was 20%. On the OT, Subject B answered 75% of the items correctly and on the VT, 55% of the items were answered correctly. The 20% difference in scores is accounted for by four answers. Closer analysis of B's errors indicates

that there was inconsistency of response from test to test. Overall, errors occurred most commonly on the marked members of the antonym pair. From the data it can be inferred that B does slightly better on a task using objects than on a task using pictures, but, further investigation of this factor is necessary due to the interference caused by inconsistent error patterns.

Subject C

Subject C was seen in the clinical situation, where she had just received one half hour of language therapy. At the time of testing, Subject C was five years and one month old. On the Auditory Reception subtest of the ITPA she received a raw score of 1, even though she answered the three demonstration items correctly. The raw score on this subtest yielded a psycholinguistic age of two years and two months old. An analysis of a fifty item language sample provided an MLU of 2.84, approximately two and one half standard deviations below the norms for the children in Group N of this study.

On the OT, Subject C answered 50% of the items correctly. The difference of 5% in scores on the OT and VT is only that of one answer. A closer analysis of C's errors indicated that her answers were inconsistent from one test to the other. That is, in this case, as in the case of Subject A, five error items on the OT did not appear as error items on the VT. Like Subject A, Subject

C could have 1. used inconsistent cognitive strategies for selecting features of an antonym pair, 2. experienced fatigue which caused inconsistent response patterns, 3. become confused by the change in stimuli. Due to the inconsistent response pattern, it is not possible to conclude what effect the stimuli had upon C's cognitive selection processes.

Subject D

Subject D was seen in the clinical situation where he attended regular language therapy sessions. On the morning of testing, D had not received any prior therapy. D was four years and nine months old at the time of testing. On the Auditory Reception subtest of the ITPA, he received a raw score of 4, which yielded a psycholinguistic age of two years and eight months. An analysis of a twenty-six item language sample provided an MLU of 3.12, approximately two standard deviations below the norms for the children in Group N of this study.

On the OT, Subject D answered 75% of the items correctly. The difference of 10% in the scores on the OT and VT is that of two answers. Closer analysis of D's errors indicates that his errors were inconsistent from test to test. His score sheet does show, however, that all unmarked members of the antonym pairs were answered correctly on the OT and seven out of ten were answered

correctly on the VT. From D's responses it could be inferred that 1. unmarked members of antonym pairs are better cognitively understood by D, especially when presented in a concrete milieu, 2. D, therefore, is in transition between the sensorimotor and preoperational stages 3. since VT was presented first, D adapted well to the task by the time OT was presented or, 4. no significant conclusions can be reached due to inconsistent error patterns.

Subject E

Subject E was brought to the testing situation by her mother. Subject E was familiar with the clinical surroundings as she received language therapy there on a regular basis. At the time of testing, E was four years and one month old. On the Auditory Reception subtest of the ITPA, she received a raw score of 3, yielding a psycholinguistic age of two years and six months. An analysis of a fifty item language sample provided an MLU of 3.26, approximately two standard deviations below the norms for the children in Group N of this study.

On the OT, E answered 70% of the items correctly. Sixty-five percent of the items on the VT were answered correctly. The difference of 5% in scores on the OT and VT is only that of one answer. Closer analysis of E's errors indicated a high level of internal consistency. On both OT and VT, Subject E gave incorrect responses for

above, smallest, same, right, last, under and different. She answered the item out of correctly on the OT but not on the VT. It can be inferred from these data that even though E has language delay she has reached a representational level of cognitive processing. For Subject E, then, stimulus mode seems to have no significant effect on her comprehension of adjectives and prepositions.

Subject F

Subject F was taken from his classroom to a quiet room in his learning center. At the time of testing, F was four years and nine months old. He exhibited language delay on the Auditory Reception subtest of the ITPA when he received a raw score of 12, which yielded a psycholinguistic age of three years and ten months. A fifty item language sample provided an MLU of 3.50, approximately two standard deviations below the norms for the children of Group N in this study. Primary diagnosis for Subject F was that of behavioral disorder, however, he was cooperative during the testing.

On the OT, Subject F answered 65% of the items correctly. Thirty percent of the items on the VT were answered correctly. The difference of 35% in scores on the OT and VT is that of seven answers. Of all the children in Group D, Subject F showed the greatest percentage spread in answers from test to test. Closer analysis of F's answers, however, showed that only nine

out of twenty items were answered consistently. That is, the items were answered correctly or incorrectly in a constant pattern (e.g., big was right on OT and VT). Due to the inconsistency of the response patterns, it can be inferred that no definite conclusions can be made about F's cognitive strategies of knowledge of the twenty selected adjectives and prepositions.

Subject G

Subject G was taken from his classroom to a quiet room in his learning center. At the time of testing, G was five years old. On the Auditory Reception subtest of the ITPA, he received a raw score of 8, which yielded a psycholinguistic age of three years, three months. An analysis of a thirty-five item language sample provided an MLU of 3.58, approximately two standard deviations below the norms for the children in Group N of this study.

On the OT, Subject G answered 65% of the items correctly. Seventy-five percent of the items on the VT were answered correctly. The difference of 10% in scores on the OT and Vt is that of two answers. Closer analysis of G's errors indicated that his answers were inconsistent from one test to the other. That is, like Subjects A and C, five error items on the OT did not appear as error items on the VT. The errors were not consistent as to marked versus unmarked items. He elicited incorrect responses fairly evenly in each marked v. unmarked set.

The inconsistent error pattern could indicate that 1. cognitive strategies for determining the feature markers in antonym pairs are non-existent for G, 2. G was giving inconsistent responses due to nervousness or fatigue, 3. the change in stimulus confused G. No conclusive statements can be made due to G's inconsistent response patterns.

Summary

The case by case analysis dramatically illustrated that on two, twenty identically itemed tests, six out of seven children gave inconsistent responses to two choice questions concerning adjectives and prepositions. The method of stimulus presentation (ie. object vs. visual) did not appear to promote any defined shifts in cognitive strategies; unless the children were using two separate error strategies. Following this reasoning, then, the children were unable to process an appropriate third strategy for dealing with the stimulus question. That is, the children used an (arbitrarily named) error strategy $_1$ on the object test and another type of error strategy $_2$ on the visual test but did not use an appropriate strategy $_x$ to process both the OT and VT in the same manner. The children also appeared never to use a single, definable error strategy for both OT and VT. It is not possible, however, to identify such a separate cognitive feature selection process from the current data.

In terms of number, four out of seven subjects

answered correctly more times on the OT than on the VT. The other S's answered correctly on the VT than on the OT. It can be inferred from the data that these children vary in their responses because of the method of stimulus presentation. Some children might use visual stimuli as a primary effector during cognitive mapping (ie. picking out semantic features) while others might use object stimuli as a primary effector during cognitive mapping.

There were other variables that possibly affected the data that makes clear inference impossible. Fatigue was one such variable. Five out of the seven children with language delay had received language therapy or classroom work immediately prior to the testing. The object and visual tests always came at the end of the testing session; an effect which could have been controlled better with a larger sample. It is possible to assume then, that the children were not cognitively functioning at their optimum level of comprehension due to fatigue.

Another variable that could have affected the results was the change in stimulus mode. It is possible that the children had cognitively adapted to one stimulus mode and became confused when a changed stimulus mode was used. The child, for example, who had adapted to the items such as more, less, and big when shown in block form could have been confused when the items more, less and big were immediately presented in pictorial form. To avoid this

in subsequent research, a significant delay could be introduced between changes in stimulus modes.

CHAPTER IV

Discussion and Implications

Discussion

This study attempted to discover whether children with language delay would respond differently from normal children on two identically itemed tests of adjectives and prepositions which differed in manner of stimulus presentation. One test used object stimuli and the other test used pictorial stimuli. It was hypothesized that the object test would be less difficult for the children with delay because of the objects' close cognitive association with the sensorimotor period. The children with delay were theoretically functioning in the sensorimotor period (Piaget, 1968); the period where the child acts primarily on objects in his environment. As the children were thought to be at the sensorimotor stage, it was felt that object stimuli would be less cognitively complex for these children than pictorial respreentations of objects. Since no published research studies have tested this, or any like hypothesis, this study can only be thought of as a preliminary probe into the initial hypotheses.

Stastically, the results yielded no significant differences between presentation models. A language delayed sample of seven, however, was too small to yield

reliable stastical data. A case by case analysis was done in an attempt to show that interindividual differences (ie. differences that occur from child to child in a group) (Kirk, 1972). were present in the studied population. While large numerical differences did occur individually, another factor strongly interfered with data interpretation. Inconsistent error patterns indicated that the children could have been cognitively processing unmarked and marked adjectives and prepositions in a way that had nothing to do with the mode of stimulus. If a consistent error strategy had been used across stimulus modes, it could have been infered that stimulus mode made no difference in the feature selection processes of children concerning adjectives and prepositions. Similarly, if children answered items concerning both members of each antonym pair consistently across two stimulus modes (ie. object vs. visual) it could have been infered that stimulus mode affected feature selection processes (e.g., if on OT, more - less were scored ( ) more, ( )less and scored (x) more, (x) less on VT it could be said that the stimulus mode affected the child's cognitive selection processes.) In this study, however, no clear error patterns relating to stimulus mode could be detected. It is felt that the cognitive selection processes for the attributes of adjectives and prepositions incorporates more cognitively complex information (e.g., cognitive discerning of polar

opposites) than external stimuli (ie. pictures, objects). Future research, then, could direct itself to the content of the test item as well as to the method of stimulus presentation.

Research Implications

1. A change in test items in order to simplify the content of the tests is needed. Such a change would make distinctions in stimulus presentation mode more noticible. In the present study such a distinction between item confusion and stimulus confusion (ie. did the child never understand any part of the antonym pair of did he understand part of the pair on the object test and guess randomly, and possibly correctly, on the same items on the visual test) is not readily clear.

2. An extended sample population would provide relaible stastical information. The author wishes to note, however, that children with language delay and chronological ages between 4-0 and 5-6 are a clinically minute population. One reason for the limited population is that many children are not diagnosed as having language delay until they enter school. In the 4-0 to 5-6 year old population therefore, language delay often remains undetected producing a small clinical population. For this reason, another researcher might wish to consider using mean length of utterance or mental age for subject matching purposes.

3. A preliminary measure of the child's manipulation of objects might also be taken while watching the child during solo play. Such a measure might provide relevant correlations between Piagetian theory and response sets.

Clinical Implications

While this study does not lend itself to general clinical implications, it does emphasize the individuality of children with language delay. The current study implies that some children respond more correctly when presented with objects than with visual stimuli. The language clinician, then, should use this information in becoming aware of the need to adapt to each child's primary mode of cognitive processing. Diagnostic approaches, too, should be made flexible enough to probe for the child's primary modalities of language concept learning. Finally on the basis of this research as well as strong clinical impressions (of the author and others), it is felt that all children do not learn in one, fixed, predetermined modality. Children are cognitively different in their strategies for language learning and should be treated as such by their language clinicians.

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APPENDICES

APPENDIX A

The Responses of the Children with Delay on the Object and the Visual Tests

Subject A

Visual Test

1. Big ✓
2. More ✓
3. Same X
4. First ✓
5. Left ✓
6. Biggest ✓
7. Smallest X
8. In ✓
9. On X
10. Above X
11. Small X
12. Less ✓
13. Different X
14. Last X
15. Right X
16. Small X
17. Big X
18. Out of X
19. Under ✓
20. Below X

Object Test

1. Big ✓
2. More ✓
3. Same X
4. First X
5. Left X
6. Biggest ✓
7. Smallest X
8. In ✓
9. On ✓
10. Above ✓
11. Small X
12. Less ✓
13. Different X
14. Last X
15. Right X
16. Small X
17. Big ✓
18. Out of X
19. Under X
20. Below ✓

Order of Presentation

Visual 2

Object 1

Score

Visual 8

Object 9

Subject B

Visual Test

1. First ✓
2. In ✗
3. Big ✓
4. Left ✓
5. On ✓
6. More ✓
7. Biggest ✓
8. Above ✗
9. Same ✗
10. Smallest ✓
11. Last ✗
12. Out of ✗
13. Small ✓
14. Right ✗
15. Under ✗
16. Less ✓
17. Small ✗
18. Below ✓
19. Different ✗
20. Big ✓

Object Test

1. First ✓
2. In ✓
3. Big ✓
4. Left ✓
5. On ✓
6. More ✓
7. Biggest ✓
8. Above ✓
9. Same ✗
10. Smallest ✗
11. Last ✗
12. Out of ✗
13. Small ✓
14. Right ✗
15. Under ✓
16. Less ✓
17. Small ✓
18. Below ✓
19. Different ✓
20. Big ✓

Order of Presentation

Visual 1

Object 2

Score

Visual 11

Object 15

Subject C

Visual Test

1.	In ✓	11.	Out of ✓
2.	Left X	12.	Right ✓
3.	More X	13.	Less X
4.	Above ✓	14.	Below X
5.	Smallest ✓	15.	Big X
6.	First X	16.	Last ✓
7.	Big X	17.	Small X
8.	On ✓	18.	Under ✓
9.	Biggest X	19.	Small ✓
10.	Same ✓	20.	Different ✓

Object Test

1.	In ✓	11.	Out of ✓
2.	Left X	12.	Right X
3.	More X	13.	Less X
4.	Above X	14.	Below ✓
5.	Smallest ✓	15.	Big ✓
6.	First X	16.	Last ✓
7.	Big X	17.	Small ✓
8.	On ✓	18.	Under ✓
9.	Biggest X	19.	Small ✓
10.	Same X	20.	Different X

Order of Presentation

Visual 2

Object 1

Score

Visual 11

Object 10

Subject D

Visual Test

1. Big ✓
2. More ✗
3. Same ____
4. First ✓
5. Left ✓
6. Biggest ✓
7. Smallest ✗
8. In ✓
9. On ✓
10. Above ✗
11. Small ✓
12. Less ✓
13. Different ✗
14. Last ✗
15. Right ✗
16. Small ✓
17. Big ✓
18. Out of ✓
19. Under ✓
20. Below ✗

Object Test

1. Big ✓
2. More ✓
3. Same ✓
4. First ✓
5. Left ✓
6. Biggest ✓
7. Smallest ✓
8. In ✓
9. On ✓
10. Above ✓
11. Small ✗
12. Less ✓
13. Different ✗
14. Last ✓
15. Right ✗
16. Small ✓
17. Big ✓
18. Out of ✗
19. Under ✓
20. Below ✗

Order of Presentation

Visual 1

Object 2

Score

Visual 13

Object 15

Subject E

Visual Test

1. In	✓	11. Out of	X
2. Left	✓	12. Right	X
3. More	✓	13. Less	✓
4. Above	X	14. Below	✓
5. Smallest	X	15. Big	✓
6. First	✓	16. Last	✓
7. Big	✓	17. Small	✓
8. On	✓	18. Under	X
9. Biggest	✓	19. Small	✓
10. Same	X	20. Different	X

Object Test

1. In	✓	11. Out of	✓
2. Left	✓	12. Right	X
3. More	✓	13. Less	✓
4. Above	X	14. Below	✓
5. Smallest	X	15. Big	✓
6. First	✓	16. Last	✓
7. Big	✓	17. Small	✓
8. On	✓	18. Under	X
9. Biggest	✓	19. Small	✓
10. Same	X	20. Different	X

Order of Presentation

Visual 1

Object 2

Score

Visual 13

Object 14

Subject F

Visual Test

1. In	✓	11. Out of	✓
2. Left	✗	12. Right	✓
3. More	X	13. Less	✗
4. Above	✓	14. Below	X
5. Smallest	X	15. Big	✓
6. First	✗	16. Last	X
7. Big	X	17. Small	X
8. On	✗	18. Under	✗
9. Biggest	a	19. Small	X
10. Same	✓	20. Different	X

Object Test

1. In	✗	11. Out of	✓
2. Left	✓	12. Right	✓
3. More	✗	13. Less	✗
4. Above	X	14. Below	✓
5. Smallest	X	15. Big	✓
6. First	8	16. Last	✓
7. Big	✓	17. Small	X
8. On	✓	18. Under	✓
9. Biggest	✓	19. Small	✓
10. Same	✓	20. Different	✓

Order of Presentation

Visual 2

Object 1

Score

Visual 6

Object 13

Subject G

Visual Test

1. More ✓
2. First ✓
3. Biggest ✓
4. In ✓
5. Above X
6. Big ✓
7. Same ✓
8. Left ✓
9. Smallest X
10. On ✓
11. Less ✓
12. Last X
13. Small ✓
14. Out of X
15. Below X
16. Small ✓
17. Different ✓
18. Right ✓
19. Big ✓
20. Under ✓

Object Test

1. More ✓
2. First X
3. Biggest ✓
4. In ✓
5. Above X
6. Big ✓
7. Same ✓
8. Left X
9. Smallest X
10. On ✓
11. Less X
12. Last ✓
13. Small ✓
14. Out of X
15. Below ✓
16. Small X
17. Different ✓
18. Right ✓
19. Big ✓
20. Under ✓

Order of Presentation

Visual 2

Object 1

Score

Visual 15

Object 13

APPENDIX B

Language Samples for all Subjects

SUBJECT A MLU 2.11

1. I don't know.
2. What?
3. Yeah.
4. Doggie
5. Times
6. You see doggie
7. No, yous.
8. Oh.
9. I play with my doggie, too.
10. Uh, uh, time.
11. Peanut.
12. You?
13. Me.
14. Me, Seth and King Kong.
15. No, Seth.
16. Back street.
17. Those are mine?
18. No.
19. I did.
20. Did we say that?
21. I just said that.
22. Go home?
23. Me too.
24. You too?
25. Eat, eat.
26. I caught you again.
27. What that?
28. I can't.
29. Are you?
30. They mine?
31. Mike.
32. I take this home?
33. That say?
34. I eat.
35. Stop.
36. Go?
37. Bye.
38. Right.
39. I didn't say that.
40. My tongue.
41. Talked back.
42. Eat that.
43. Me go?

SUBJECT B MLU 2.32

1. Candy.
2. Yes.
3. Bites.
4. Give candy.
5. Porky.
6. This and candy.
7. There some toys.
8. And my toys.
9. At home.
10. Play.
11. What's this?
12. Walk.
13. Through street.
14. Toys.
15. Listen?
16. I meant no.
17. Horse.
18. Blocks.
19. Can I see?
20. Close my eyes?
21. Baby.
22. Baby's blocks.
23. Max.
24. That one.
25. Allgone.
26. The baby blocks.
27. Big baby blocks.
28. Get the box?
29. Go see mommy.
30. I wanna take these home.
31. Thank you.

SUBJECT C MLU 2.84

1. Block.
2. Huh?
3. Work.
4. Got it.
5. Do you have pencil?
6. Do you use that pencil?
7. Look at that.
8. In a cake.
9. Yeah.
10. My piggy went doctor.
11. Piggy.
12. The king.
13. My ma get doctor.
14. Burn her arm.
15. Look at burn.
16. One.
17. Two, three, five.
18. Me.
19. Me eat at home.
20. Peanuts.
21. Have that at home.
22. Is all?
23. Oh-oh, that.
24. The can's broke.
25. Them is broke.
26. Is that a book?
27. That's a blue pen hat.
28. More peanuts?
29. Little mark.
30. Peanut.
31. Me go home?
32. Get a sticker?
33. That's got a hole.
34. See, I got it.
35. See my mommy.
36. You have birds?
37. My mommy and me.
38. Me took it home.
39. This your paper?
40. See my new shoes?
41. I know.
42. Go home my mommy?
43. What we do?
44. What?
45. Go home.
46. I put up there.
47. I have block?
48. Big block.
49. I help you?
50. This one?

SUBJECT D MLU 3.12

1. Me does.
2. Is a macaroni and cheese.
3. That mommy.
4. That break.
5. My toys.
6. Me does.
7. Raining outside.
8. Cold water.
9. Raining inside.
10. Up clouds up there.
11. What's in here?
12. Big ones.
13. What's in there?
14. What doing?
15. That my baby is a baby.
16. Not funny.
17. Here peanut man.
18. It have grease on it.
19. What have that for?
20. I want a cookie back.
21. Fishes.
22. Kids in.
23. Mommy, find cookie shop.
24. Here Donna.
25. Way over there.
26. Bye.

SUBJECT E MLU 3.26

1. I go school
2. Me go to school.
3. Yêah.
4. The nursery school I go.
5. See animals.
6. I go to the barn.
7. See a lot of.
8. Go to barn?
9. To see animals.
10. A big one.
11. What are those.
12. No.
13. I didn't have a dog.
14. What is this?
15. Tape recorder.
16. I just see a peacock.
17. I see goats and cows.
18. And I ride on a wagon.
19. Cows.
20. Speed up cows.
21. The man cows.
22. He see the cows.
23. See those?
24. Those peanuts.
25. I'm four.
26. That's a three here.
27. Here's four.
28. Peanuts good.
29. O.K.
30. Crumb is good.
31. My band-aid.
32. I fall down on the sidewalk.
33. So I cry.
34. She put a bandaid on.
35. Peanut.
36. Peanut butter.
37. That chair.
38. I do?
39. Show me out.
40. Why you do mine?
41. My brothers and sisters.
42. Tickle-tickle.
43. I am a tickle-bug.
44. Show me left.
45. I'll eat.
46. I'm allgone.
47. I need a peanut.
48. Who is it?
49. And jelly.
50. Peanut butter and jelly.

SUBJECT F MLU 3.50

1. Gonna be me.
2. Then Schoolfield.
3. Tommy Schoolfield.
4. I bite him.
5. Cause.
6. Yes.
7. What's this?
8. A turkey.
9. Sing.
10. Then I can go back in the room.
11. And I eat my peanuts up.
12. Play with Schoolfield.
13. I go turn off when it stop.
14. But you don't.
15. I do.
16. This button or this button said off.
17. Oh-oh.
18. O.K.
19. Gonna do some good work today.
20. What's that?
21. Gonna come on.
22. It's gonna be you and me.
24. What got in there?
25. I want some first.
26. I'm gonna watch that, too.
27. I get some more up.
28. Cats eat.
29. Here.
30. I can have some more again.
31. I go watch that first.
32. Can't say that.
33. You say girl.
34. Can have some candy.
35. And listen to that.
36. I want a peanut in a minute.
37. I gonna listen to that.
38. Right now I am.
39. I can?
40. Eat peanut all up.
41. I'm going back in a minute.
42. What's this?
43. This.
44. This right here.
45. Now.
46. Eat the peanut.
47. Can I listen to that?
48. Drop 'em?
49. Blocks to eat.
50. I lost them.

SUBJECT G MLU 3.58

1. What's in there?
2. I can see a car.
3. Blocks.
4. Playin games.
5. Lotto.
6. Cards.
7. You put 'em on your card.
8. Nothin.
9. If you win all the cards on it you win.
10. Tricycles.
11. What is that?
12. O.K.
13. Don't know that one.
14. What?
15. I don't know very much.
16. I don't know anymore.
17. I don't know what that means.
18. I don't remember that one.
19. I want some peanuts now.
20. I don't know.
21. Can't fool me.
22. Where'd you get them other blocks?
23. Yeah.
24. I wanna go back to school.
25. Because.
26. Just because.
27. My mom.
28. Playin' motorcycle.
29. Andy is almost done there.
30. I just have one more peanut.
31. What?
32. Go with my class.
33. Downstairs.
34. Play.
35. Cause we get to go outside everyday.

SUBJECT 1 MLU 4.08

1. Cartoons and everything.
2. No.
3. Yeah.
4. He's Spots.
5. He's old.
6. He's got worms.
7. I don't know.
8. My mommy does it.
9. No, it's old.
10. Bought it at somebody's place.
11. A sister.
12. That's it.
13. Playin'.
14. Eatin' supper, too.
15. I did.
16. O.K.
17. What?
18. I watch it.
19. I watched it on Saturday.
20. I watched Dracula.
21. The Dracula.
22. Just cartoons.
23. And we can watch Rifleman.
24. And Gunsmoke's on.
25. Just cowboys and Indians.
26. Know what?
27. We watch Three Stooges.
28. I can't say that, though.
29. I can't.
30. You help me say it.
31. I'm too tired.
32. That's because I'm tired.
33. I'm tired of doin' this.
34. Got one more?
35. Mean this many?
36. Look.
37. Shut it on the trunk.
38. On the trunk, not on the truck.
39. On the trunk.
40. But it hurt.
41. When I put cold water on it, it hurts.
42. Got two more and that's it to do?
43. Is there some more in there?
44. Is they the same ones?
45. I'm almost done, right?
46. Got a whole lot more, do you?

SUBJECT 2 MLU 4.18

1. Cut them.
2. With crayons.
3. Chalk.
4. Got a splinter.
5. Yeah.
6. Don't like the shells.
7. I don't want it.
8. Allright.
9. No.
10. My mom had to work.
11. I had to come over here.
12. Don't know.
13. We colored on the sidewalk.
14. Haley.
15. My dad's got a dog.
16. Smokey.
17. That stuff.
18. So does that one.
19. Uh, best part.
20. I wish I had some salt.
21. I don't want to.
22. O.K.
23. I don't know how to say that.
24. I want my mom.
25. I'm really tired.
26. I want some more of them.
27. Someone's coming.
28. I can't.
29. I might not know.
30. It's got stuff on it.
31. That's all I want for right now.
32. Hey, that's the biggest block.
33. Goin' through all of them.
34. Hey, you forgot to cover all that line up.
35. You really can't trick me.
36. Wow, what a big stack!
37. Are you here on Saturday?
38. It's closed on Saturday.
39. There were a lot of them.
40. Better hurry up before Kim goes away.
41. Kim.
42. So better hurry up.
43. Not yet.
44. I really can trick you.
45. This is like a tennis game.
46. Sometimes I play ballgames.
47. I am.
48. I wanna eat somemore of those.
49. Stop.

SUBJECT 3 MLU 4.44

1. One.
2. Abby.
3. All kinds.
4. She's a black dog and a white dog.
5. I got a cold.
6. Six months.
7. What?
8. Good.
9. Everybody.
10. We was making pictures down in there.
11. We get black paint and stick our fingers in there.
12. Put 'em up.
13. We have to let them drip on our paper.
14. Black.
15. We have to give 'em to our moms.
16. Can't do that.
17. Peanuts?
18. What was that?
19. That takes too long.
20. What are they doin'?
21. Don't wanna do that anymore.
22. Yeah.
23. Can I help you?
24. When I get home, my mom and dad said I have to go to the doctor.
25. To get my mosquito bites off.
26. We're all done, ain't we?
27. Better close the peanuts.
28. I like'em.
29. That your car?
30. This your room?
31. Can I go back?
32. What's this?
33. Can I turn it back up?
34. Amy Curry.
35. What's that seat?
36. I've got a belly ache.

SUBJECT 4 MLU 4.44

1. We weren't playin' a game before.
2. Makin' a picture.
3. Diamonds.
4. I cut 'em out.
5. Nothin'
6. I think my mon's gonna fix some Kool-Aid today.
7. Sometimes.
8. Long time ago I did.
9. When I was three.
10. Poured it in the thing.
11. In the Kool-Aid thing.
12. And that's all I did.
13. Then I put water in it.
14. Mommy let me stir the macaroni once.
15. Mommy was cuttin' Daddy's hair.
16. I don't like cut hairs.
17. She cut my bangs off.
18. I know.
19. They growed back down.
20. That's what my daddy has.
21. But he has white on it.
22. To write.
23. And that's all.
24. I play outside sometimes.
25. Playin'
26. Adam's bike.
27. He don't want me to, though.
28. I ride in it.
29. And that's all I do.
30. Test my ears.
31. What?
32. I don't remember that.
33. Look what I have on.
34. You know what?
35. I went to the fair before.
36. I saw some funny clowns.
37. I rode on a horsie.
38. Play horsie.
39. It goes up and down.
40. I don't know.
41. I know.
42. I'm peeking.
43. I got a cold.
44. A long time.
45. It started again.
46. I was all swollen up.
47. A long time ago.
48. Mommy put me in baby bed.
49. When we come home.
50. No peeking?

SUBJECT 5 MLU 4.48

1. Nothin'
2. Play and go home.
3. I watch television at home.
4. That movie.
5. Fireman in it.
6. Old policeman.
7. They put, one put crooks in jail.
8. And they put in the hospital.
9. And fireman come and spray the fire.
10. O.K.
11. Playin' with him.
12. Me and Tracy throw blocks at Jean.
13. Tracy throw blocks at my teacher.
14. This is where my brother sit.
15. They let me sit down there.
16. Mikey sit right here.
17. And I sit right here.
18. He kicked over his chair.
19. Over his bed.
20. Mikey made me hurt my head.
21. I went to the doctor.
22. My brother said sorry and I went back home.
23. And I was, um, at the hospital.
24. I had a fever.
25. Yeah, but my brother pushed me down.
26. I could eat all of this.
27. Yeah.
28. It is.
29. Hi, Sherry.
30. Sherry, Sherry, talk to me.
31. She doesn't like you to talk to her.
32. No peekin'
33. I'm out of peanuts.
34. That one there?
35. Little one and a big one.
36. That's hard, ain't it?
37. Looks like a big slide.
38. Two came off.
39. Show me off.
40. I could get it.
41. Where you goin?
42. I want some more peanuts.
43. One, two.
44. Five more.
45. This is five.
46. Let me count.
47. One. two, three, four, five, five!
48. One more, me.
49. This?
50. Now I can have some more peanuts.

SUBJECT 6 MLU 4.59

1. Forget.
2. After I'm done here, I'm gonna pick Michelle up and go to Cinncinnati Zoo.
3. My daddy and Rick and Michelle.
4. I don't know yet.
5. I can't wait to go there.
6. I forget.
7. What did you say?
8. What does that mean?
9. I don't know.
10. O.K.
11. I'm gettin' tired of sayin' this.
12. Why?
13. What are they doin'?
14. One, two, three, four, five, six, seven.
15. That many?
16. Now how many do I have?
17. I've got a bike that has training wheels.
18. When am I gonna be finished in a minute?
19. What do you mean?
20. How?
21. When am I gonna be done?
22. Everybody's done and we're still doing it?
23. Which one of these?
24. These two are four.
25. I am four.
26. I bet these are the little, teeniest blocks.
27. What is it?
28. I'm gettin tired of doin this.
29. Do I have to do two more?
30. I bet we have little ones and big ones.
31. I want a big one.
32. Where's below.
33. I'm looking.
34. I was looking.
35. I'm lookin' again.
36. That's three.
37. That's two.
38. Which one?
39. No.
40. Eight.
41. Maybe.
42. I wanna eat it out there.

SUBJECT 7 MLU 4.92

1. Ernie.
2. He's the bird on Sesame Street.
3. I don't know.
4. My mommy drove me here.
5. I don't want to.
6. O.K.
7. I do.
8. Tape something?
9. I like cake, mmmm.
10. Short one.
11. I don't know what you got to tape?
12. Things, tape recorders.
13. Where do I have to say it?
14. What's in that tape recorder?
15. What's that?
16. I want you to tape some tape recording.
17. Tape recorders.
18. Small and big.
19. I know.
20. Now you'll turn the page again.
21. People are playin' outside in the playground.
22. Some of my class did go out there.
23. Oh, oh, see the blocks.
24. I'll put the lid back on.
25. Now, turn it this way, away.
26. I have a sister, that's all.
27. I have a mom and dad, too.
28. I have a sister, she's only seven.
29. I told you already, four.
30. What, what?
31. Big, big, big, big.
32. Gotta take a piece of paper.
33. I want some more peanuts.
34. I wanna help you.
35. I'm gonna sort.
36. I'll put it right here.
37. Is this the lid?
38. Here's one.

SUBJECT 8 MLU 5.42

1. I don't know.
2. Better put Raggedy Ann over there someplace so it doesn't bother you.
3. Sara May, close that door for us, please.
4. Be careful with your fingers.
5. We could sit on any party pillow we wanted.
6. No, it doesn't start with a "Y", "S".
7. I know how to spell my name.
8. Um, I want to show you how spell my name.
9. Think so.
10. What's the tape for?
11. A little bit.
12. Usually I like to eat nuts more better than other kinds of food.
13. Yeah.
14. Very nice.
15. O.K.
16. Are you pointing to Christopher Robin?
17. That is Christopher Robin.
18. Winnie the Pooh!
19. And there's already peanuts over there, too.
20. I'll close my eyes.
21. What's her name?
22. I want to do this one.
23. That's because this one has one.
24. I don't know what left is.
25. This?
26. I think this is less.
27. I just guess I'm smart.
28. Pretty soon I have to go to cookies.
29. This is smallest of all.
30. It's like it says right there, small.
31. Like this?
32. When are you gonna do that?
33. When are you gonna do the tape that I said?
34. Gretchen Matilda.
35. I wanna play it.
36. I don't know what to say.
37. Did papers.
38. Tell who?

SUBJECT 9 MLU 5.44

1. I was workin with her, that's what I was doin'.
2. I don't know.
3. Paintin' and stuff.
4. What are we doin?
5. Yes.
6. Whole lots of things to do?
7. O.K.
8. I don't know.
9. I got a brother and he likes peanuts, too.
10. Yes, play with him a whole lot of times.
11. I can't think.
12. I don't want to say that.
13. I don't know what to say.
14. Let's say that again.
15. What if I can't say it?
16. I didn't hear that.
17. That all of them?
18. Have to do all of them?

SUBJECT 10 MLU 5.5

1. It's gonna be fun.
2. This chair is fun.
3. Takin' naps and playin'.
4. I don't like to take naps.
5. Because I'm not even tired.
6. Yeah.
7. I like to go on the swings.
8. High swings the most, I like.
9. Do you see out of those wood things?
10. I like to get a hold of the bars where the swings are hooked and I just walk and keep my balance holding on to that and I just hold on this way or that way.
11. Only Big Wheels.
12. I don't got a two wheeler and I can't ride it.
13. What are these boxes for?
14. Pictures?
15. Blocks.
16. What is this box for?
17. Is it more blocks?
18. Listen to that.
19. What is this?
20. Peanuts.
21. O.K.
22. I don't know what a hatchet is.
23. I don't know.
24. I don't know what a waddle is.
25. A penguin a bad guy?
26. What?
27. What does bloom mean?
28. Chinese cup?
29. I just love them.
30. No.
31. Tryin as hard as I can.
32. These are good.
33. Well?
34. Can I have ten of them?
35. I can eat them.
36. Pretty soon, I have a dog.
37. I'll play with him.
38. And I'll tell him to get that person.
39. Anyone I'm mad at.
40. No, if I'm mad, I'll have him bite him.
41. I don't know where you live anyways.
42. It dropped right in the basket.
43. Looky.
44. Yeow, that's hard.
45. Three and two.
46. Do you know what three and three makes?
47. Six.
48. I know him.

SUBJECT 10 (Continued)

49. Jenny's not here.
50. Did you see him?

SUBJECT 11 MLU 5.84

1. I was coloring.
2. Coloring a design.
3. And red polka dots and all the other triangles were blue.
4. Take it home to my mom.
5. I have a bike and it's yellow.
6. And it has red roses on it.
7. And I already know how to ride it.
8. With nobody holding my bike.
9. And sometimes I eat a whole jar of pickles.
10. And sometimes my mommy eat the whole jar.
11. Yes she does.
12. The sour kind.
13. That's what my mommy has at work.
14. One time a girl smacked me.
15. I smacked her face.
16. She smacked me right here.
17. But it didn't hurt.
18. Sometimes my mommy eat the whole of it.
19. What's that thing down there?
20. See, whose two coats are them?
21. This time you'll use real hard ones.
22. I know what I'm gonna do.
23. I'm gonna try put the blocks big on little one.
24. I can't see could I?
25. I can see some, ho, ho, ho.
26. I was lookin at your blocks.
27. I saw it, too.
28. I twisted it around.
29. I bout we stack 'em up nice?
30. Close my eyes again?
31. Ten?
32. I can count to ten.
33. Come on, peanut.
34. I'm lookin'.
35. I am.
36. I'm smart.
37. I can still see.
38. I can see from your glasses.
39. The next time let me take one off.
40. I'll take them all off.
41. Which one is that?
42. What's that tape recorder for?
43. I'm a smart girl.
44. David.
45. Yeah, I'll go get him.
46. One time I had to get my eyes checked.
47. You know something?
48. I didn't want to.
49. I hate it, I hate it.
50. I hate to.

SUBJECT 12 MLU 6.12

1. There's a Marie out there.
2. There's a little girl in the Widget Room, Marie.
3. And she's a little one.
4. And I couldn't make it then.
5. Just lookin at some magazines and having juice.
6. The Sesame Street one.
7. Fireman.
8. Well, he's got a big and red thing behind his back.
9. And he gets out fires but not like Squad Five.
10. Well, they get the fire out.
11. I mean the big firetruck gets fire out.
12. And the other trucks can't come.
13. No, I've got some babies, though.
14. Just pretend ones.
15. Know who I got?
16. Cookie Monster.
17. I sleep with him most of the times.
18. I play with him.
19. What's that for?
20. Listening to.
21. Hold them here.
22. You can eat these, too.
23. I want four of them, four peanuts.
24. Smell my gum.
25. Where can I throw my gum?
26. I'll put it in the can.
27. I can show you another one.
28. When are you gonna turn that on?
29. Just me.
30. Pretty soon Kim K.'s mother is going to the hospital and Kim K. is gonna come to my house.
31. And she's gonna stay for a little while.
32. Put in your Kleenex.
33. I don't know.
34. When I'm done, I gonna get a drink.
35. Whoop!
36. You're tryin' to fool yourself.
37. I knocked that under there a bit.
38. Why do you have teensiweensy blocks and big blocks?
39. I have ponytails today.
40. Make you close the book up.
41. What?
42. You get that.

SUBJECT 13 MLU 6.31

1. I don't know.
2. We were playin rocketship.
3. Well, see, I was the one who started it.
4. See, there's a little thing on the bottom and I kicked it to make it start and then there's a pedal that makes the engine start to start the rocketship and the rocketship takes off to the moon.
5. Yes.
6. Well, you see, I didn't go to the moon.
7. The other kids did, you see, I'm the one who started the rocketship.
8. And it was down beneath see, so I could start it up.
9. And I couldn't jump on because the rocketship is faster than I can jump.
10. Took off real fast.
11. Speaking of that, how fast does the Road Runner do?
12. Beep-beep.
13. I can almost run as fast as the Road Runner.
14. Well, I could run to the tree because Road Runner is kind of a bird, you know.
15. He would fly up into the tree.
16. No, I couldn't fly.
17. I would climb the tree up.
18. Just like a cat.
19. No, I don't.
20. I have a baby.
21. A baby sister.
22. About, ah, twenty, twenty months one.
23. Tina.
24. I play with her and stuff.
25. We just play around.
26. My mommy can spell my last name.
27. She'll tell you later.
28. What?
29. What are chairs?
30. What are tresses?
31. Are sausages kind of clowns or kings?
32. This is hard.
33. Do you mean fly?
34. For what?
35. You mean for eating?
36. Oh.
37. What do we do with them?
38. Do you mean when you say it, I copy it.
39. That's funny.
40. I like peanuts and I don't like peanut butter.
41. That's pretty funny.
42. This one.
43. Think we're gonna stay here.
44. Think they're comin in now.

SUBJECT 13 (Continued)

45. I don't know.
46. O.K.
47. When I finish it I can have a peanut, can't I?
48. What?

SUBJECT 14 MLU 6.57

1. What?
2. I don't know.
3. I got a little puppy.
4. His name's Barkey.
5. It's a girl.
6. Got a long time.
7. I get in her dog house when she gets in it.
8. Has a roof like this.
9. No, she gets in.
10. And when she sleeps, she has a rug in it so she don't sleep on it.
11. When I go away, and she's still out there, she goes, she barks.
12. And when I gone in the house she cries.
13. Any kind.
14. Play games inside the doghouse, anything.
15. I'm gonna buy one.
16. And then I'm gonna get a flea for it.
17. Yeah, a cat flea.
18. It makes the fleas go away.
19. Yeah, a white one.
20. No, she chewed it in half.
21. And she got away.
22. My mommy caught her.
23. I helped her.
24. I caught her.
25. Cause I was running fast.
26. And I kicked over somethin and I found another thing and I jumped way up there.
27. Way up over it.
28. Look at that little puppy up there.
29. My little puppy's that little like that puppy.
30. I can't do that.
31. I don't want to do this.
32. I don't know how.
33. Couldn't hear it.
34. I don't know that.
35. Can't.
36. I just don't know what to do.
37. Barkey.
38. She.
39. I'm gonna bring Barkey over here sometime.
40. I'm gonna walk by myself.
41. On her tail she's brown and white and black.
42. On her back she has brown and white.
43. And on one of her ears she has a little bit of brown and white.
44. Got her when Daddy went to visit Grandma.
45. I've got two grandmas and two grandpas.

SUBJECT 14 (Continued)

46. Know who's gonna come over sometime when I'm big?
47. Kathy.

SUBJECT 15 MLU 7.53

1. Not yet.
2. You mean Thomas?
3. Working and....
4. What are these?
5. I don't know what they are.
6. Does paddle mean when they fall down?
7. I have a neighbor type friend who has a little boy and that's my friend.
8. And his name is Kevin but on the first when I saw him he was just hitting people and hurting people.
9. And then he stopped.
10. That's what color eyes I have.
11. My mother.
12. You know what?
13. You said the juice that the kind of juice that I like.
14. Yes.
15. What?
16. I like to play basketball.
17. Like out on the playground there's a basketball thing that you can throw the ball at.
18. I like dogs.
19. I like cats, too.
20. My grandmother has a cat and it's white all over.
21. And it's my favorite color I think.
22. Not white all over just white on its head and brown all over its outside.
23. Our neighbor's cat has big feet.
24. What's this for?
25. Are you gonna turn that on after you're done, too?
26. What's that?